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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,815	01/28/2002	Takashi Shirakawa	9281-4269	2461

757 7590 10/22/2003

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EXAMINER

FEGGINS, KRISTAL J

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/058,815

Applicant(s)

SHIRAKAWA ET AL.

Examiner

K. Feggins

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MW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-13 is/are allowed.
- 6) ☒ Claim(s) 10 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. The indicated allowability of claims 10-11 is withdrawn in view of the newly discovered reference(s) to Seino et al. (US 5157414). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nikaido et al. (EP 0 459 481 A2, IDS) in view of Seino et al. (US 5,157,414, IDS).

Nikaido et al. disclose the following claimed limitations:

- * regarding claims 10; a thermal head (Abstract)
- * a thermal insulation layer/hear resistant resin layer/ on a radiative/dissipates/ substrate/ceramic or glassy epoxy substrate/ (Abstract, col 5, lines 1-5)
- * a plurality of heating resistor elements/conductive material formed of predetermine portion of the heating resistor layer/ on a top face of the thermal insulation layer (col 5, lines 25-40, fig 2);
- * a power supplier that includes an individual electrode/15/ and a common electrode/18/ connected to the heating resistor elements/14/ to supply power to a heating resistor (pg 4, liens 13-27);

* a protection layer/17/ that covers surfaces of at least the heating resistor/14/ elements and the power supplier/15 & 18/ (pg 4, lines 25-27, fig 2)

*wherein the thermal insulation layer/resistant resin layer/ includes an organic thermal insulation layer containing polyimide resin (pg. 2, lines 56-58, pg 3, lines 54-56, pg 4, lines 3-19, fig 2).

Nikaido et al. does not disclose the following claimed limitations:

* wherein a thermal diffusion layer is formed on a top face of the heating resistor elements with interposition of an electric insulation film.

* wherein the thermal diffusion layer comprises a high melting point metal.

Seino et al. disclose the following claimed limitations:

* regarding claim 10, wherein a thermal diffusion layer/6/ is formed on a top face of the heating resistor elements/4/ with interposition of an electric insulation film/5/ (col 5, lines 10-19) for the purpose of providing a smooth printed images by achieving a uniform temperature distribution in each of pixels on a thermal head surface.

* regarding claim 11, wherein the thermal diffusion layer comprises a high melting point metal (col 5, lines 10-19, Table 1) for the purpose of achieving an object without any reduction in image resolution.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a thermal diffusion layer is formed on a top face

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of the heating resistor elements with interposition of an electric insulation film; and a thermal diffusion layer comprises a high melting point metal, taught by Seino et al. into Nikaido et al. for the purposes of providing a smooth printed images by achieving a uniform temperature distribution in each of pixels on a thermal head surface and achieving an object without any reduction in image resolution.

Allowable Subject Matter

4. The following is an examiner's statement of reasons for allowance: The primary reason for the allowance of claims 12-13 is the inclusion of the limitations of a thermal head that includes a thermal diffusion layer is formed on bottom faces of the heating resistor elements with interposition of an electric insulation film. It is this limitation found in the claims, as it is claimed in the combination of, which has not been found, taught or suggested by the prior art of record that makes these claims allowable over the prior art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Aria et al. (US 4,096,510) disclose a semiconductor silicon device that includes a semiconductor silicon substrate having a diffusion layer. Mitani (US 5,444,475) disclose a thin film thermal recording head with two layers of thermal insulation layer are formed from a heat resistant resin and an inorganic insulator.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

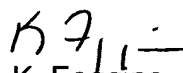
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Communication With The USPTO

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Feggins whose telephone number is 703-306-4548. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, B. Fuller can be reached on 703-308-0079. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


K. Feggins
October 17, 2003